

Amendment Under 37 C.F.R. §1.111
Application No. 09/891,511
Attorney Docket No. 010819

REMARKS

Claims 61-63, 68-74 and 84-85 are pending. Claim 83 has been cancelled herein without prejudice or disclaimer. Claims 61 and 68 are amended herein. Claim 61 has been amended to include the limitations of claim 83 and is supported by the disclosure at page 127, lines 9-24 of the specification and Fig. 22. Claim 84-85 are added herein. Support for new claims 84-85 is located at page 127, lines 9-24 of the specification and in original claim 61.

Applicants' Response to Claim Rejections under 35 U.S.C. §112

Claim 83 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Office asserts that the claim contains subject matter which was not described in the original disclosure. Specifically, the Office cites to the phrase "an electric charge detector for detecting an electric charge of said electrode" as is claimed in presently amended claim 61 and new claim 84. Applicants respectfully traverse. Page 127, lines 9-15 of the present specification states that an "electric charge detector 846 having a high level of impedance utilizes an idle time ... in order to measure the amount of the electric charge of the electrode 841 located in the proximity of the object W." This limitation is further explained in relation to the invention in Fig. 22 and page 123 to page 128 of the specification. Wherefore, applicants respectfully submit that the limitation is fully supported by the disclosure in the specification.

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Claim 68 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. In response thereto, applicants have amended claim 68 to depend from claim 61.

Applicants' Response to Claim Rejections under 35 U.S.C. §103(a)

Claims 61, 62, 71, 73, 74, and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,665,968 to Meisburger et al. in view of U.S. Patent No. 4,803,358 to Kato et al., U.S. Patent No. 6,315,512 to Tabrizi et al., U.S. Patent No. 5,536,128 to Shimoyashiro et al., UK Published Patent Application 2171119 to Grubb et al., and U.S. Patent No. 6,344,750 to Lo et al. Applicants respectfully traverse on the basis that the combination fails to teach or suggest each and every limitation of the claimed invention. Specifically, the combination of references does not teach or suggest: (1) providing an electrode located in the proximity of the object to be irradiated with the beam; (2) an electric charge detector for detecting an electric charge of the electrode, and (3) a power source for generating a voltage to the electrode corresponding to the electric charge of the electrode for offsetting the electric charge of the electrode.

The Office asserts that Lo teaches, to provide an electrode (charge control plate 30) between the objective lens (34) and the object to be examined (wafer 22) and to apply a voltage to this electrode to control the electric field between the object and the objective lens at lines 4-20 in column 7. Further the Office asserts that at lines 37-55 in column 6, Lo also teaches to

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provide, along with the electrode (30), a precharge unit comprising a charged particle irradiating section (36) for irradiating low voltage electrons in advance against said inspecting region just before the inspection, and explains in detail how precharging, along with the operation of the charge control electrode (30), removes variations of charge accumulated on an object under test. However, these teachings do not equate to the present invention as claimed.

Lo discloses applying bias voltages to a charge control plate 30 from a bias source 32 to optimize a voltage contrast depending on the type of wafer being imaged and the type of defect to be detected. However, Lo neither teaches nor suggests providing an electrode located in the proximity of the object to be irradiated with the beam, an electric charge detector for detecting an electric charge of the electrode, and a power source for generating a voltage to the electrode corresponding to the electric charge of the electrode for offsetting the electric charge of the electrode. The charge control plate 30 of Lo is located in the proximity of the objective lens 34, and applies a voltage between the wafer 22 and the charge control plate 30 to thereby optimize a voltage contrast.

Further, in Lo, a bias voltage is applied to the charge control plate 30, irrespective of whether the charged control plate 30 is charged or not, to control optimization of a voltage contrast depending on the type of wafer being imaged and the type of defect to be detected. However, Lo neither teaches nor suggests providing any device for measuring an electric charge of the charge control plate 30, nor any device for offsetting the electric charge of the charge control plate 30.

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Contrary in the present invention, an amount of an electric charge charged on the electrode itself is measured by the electric charge detector, and a voltage is applied to the electrode to offset electric charge charged on the electrode. Accordingly, the secondary electrons emanating from the surface of the object are not influenced by the electric charge. In this manner, it is possible for the secondary electrons to maintain their proper trajectory, which otherwise would be influenced depending on the condition of the electric charge on the electrode, i.e. wafer. Hence, in the presently claimed invention, it is possible to reduce or prevent the distortion in an image caused by the charging with no regard to the properties of the object to be inspected. These features are neither taught nor suggested by any of the cited references including Lo.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



Michael J. Caridi

Attorney for Applicants
Registration No. 56,171
Telephone: (202) 822-1100
Facsimile: (202) 822-1111

MJC/af